

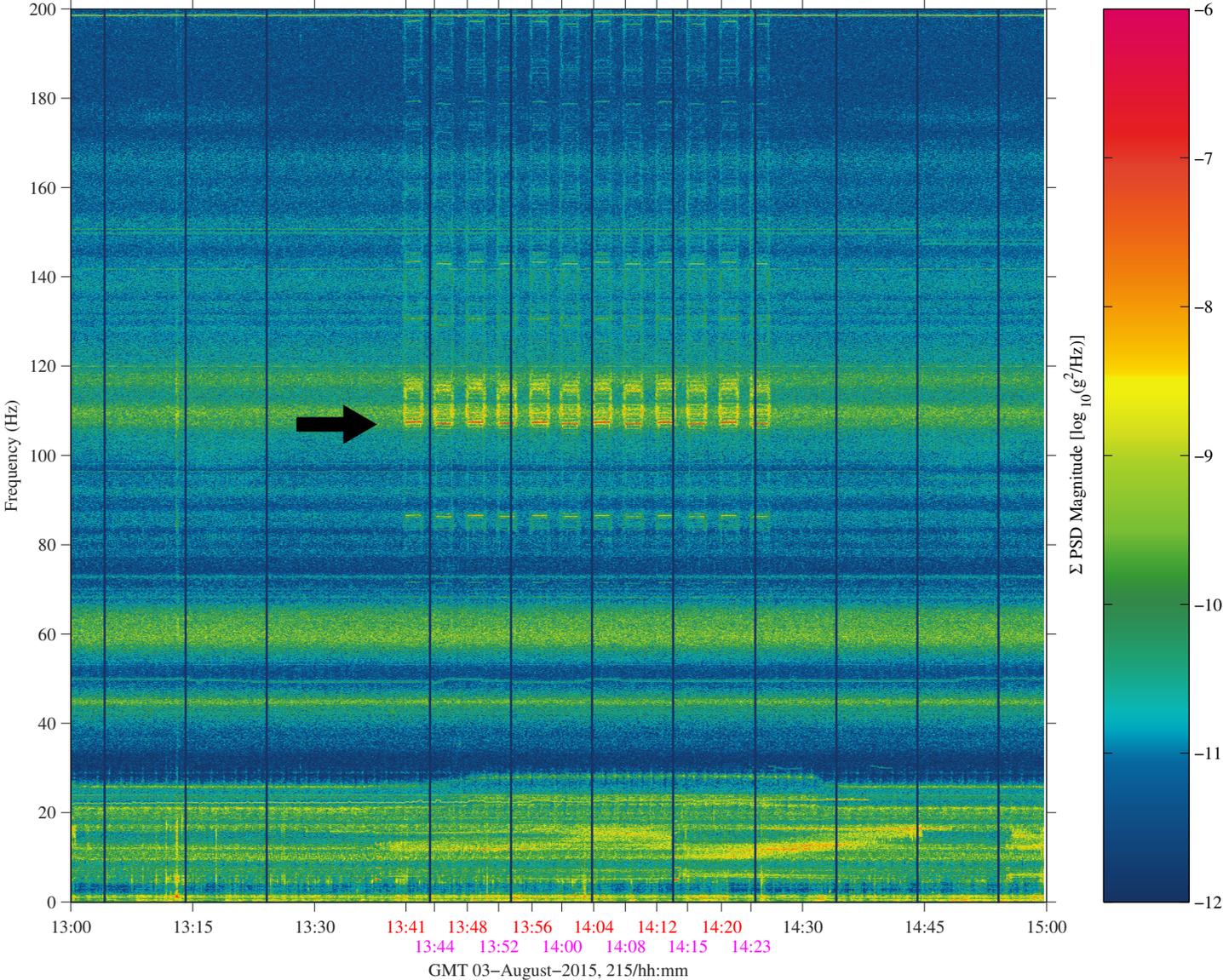
# BioLab Centrifuge Rotor Test

sams2, 121f08 at COL1A3, EPM, near PK-4:[371.17 287.43 165.75]  
 500.0000 sa/sec (200.00 Hz)  
 $\Delta f = 0.061$  Hz, Nfft = 8192  
 Temp. Res. = 8.192 sec, No = 4096

SAMS2, 121f08, COL1A3, EPM, near PK-4, 200.0 Hz (500.0 s/sec)

Start GMT 03-August-2015, 215/13:00:00.002

Sum  
 Hanning, k = 877  
 Span = 119.60 minutes



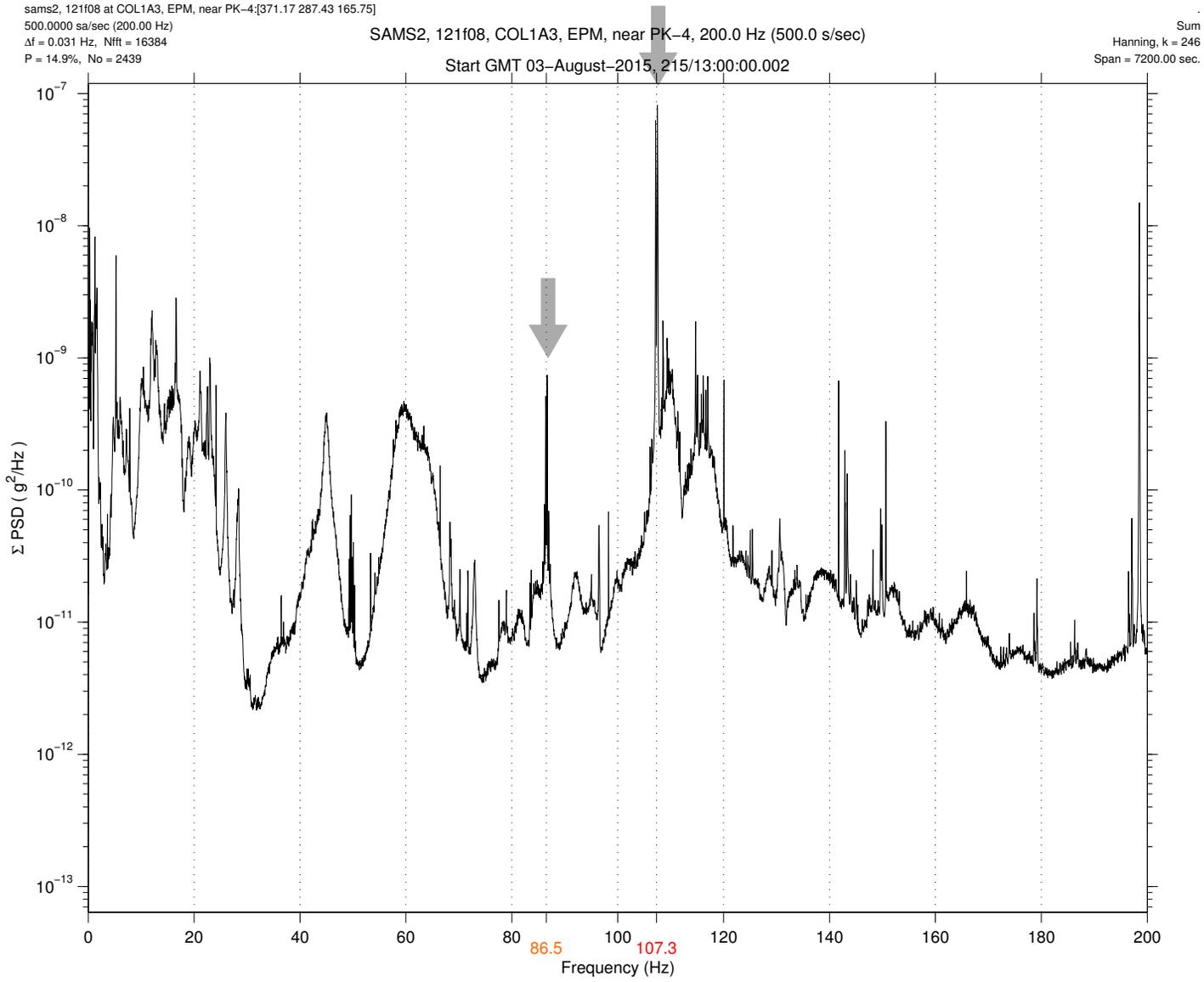
Description	
Sensor	SAMS 121f08 500.0 sa/sec, 200 Hz
Location	COL1A3, EPM, near PK-4
Plot Type	Spectrogram

- Notes:**
- This color spectrogram shows the 12 two-minute interval tests of a BioLab centrifuge rotor in the Columbus module.
  - Note the narrowband, horizontal red traces near 107 Hz that start at the GMT hh:mm shown in the colored tick marks along the time axis.
  - The alternating two-minute periods that start on the red tick marks are at slightly higher frequency than the magenta ones.
  - The rotational rate of the rotor was to be about 60 RPM with drive motor at 600 RPM, but we see vibratory harmonics at much higher frequencies in these SAMS sensor measurements in the EPM rack adjacent to the BioLab rack.

Regime:	Vibratory
Category:	Equipment
Source:	BioLab Centrifuge Rotor



# BioLab Centrifuge Rotor Test



Description	
Sensor	SAMS 121f08 500.0 sa/sec, 200 Hz
Location	COL1A3, EPM, near PK-4
Plot Type	Power Spectral Density

- Notes:**
- This power spectral density plot is the averaged spectra used in the previous color spectrogram.
  - Note primarily the spectral peaks near 107.3 Hz and 86.5 Hz.
  - The peak at about 107.3 Hz shows that this rotor-induced vibration dominated the acceleration spectra at the SAMS measurement location in the EPM rack during this short span.

Regime:	Vibratory
Category:	Equipment
Source:	BioLab Centrifuge Rotor

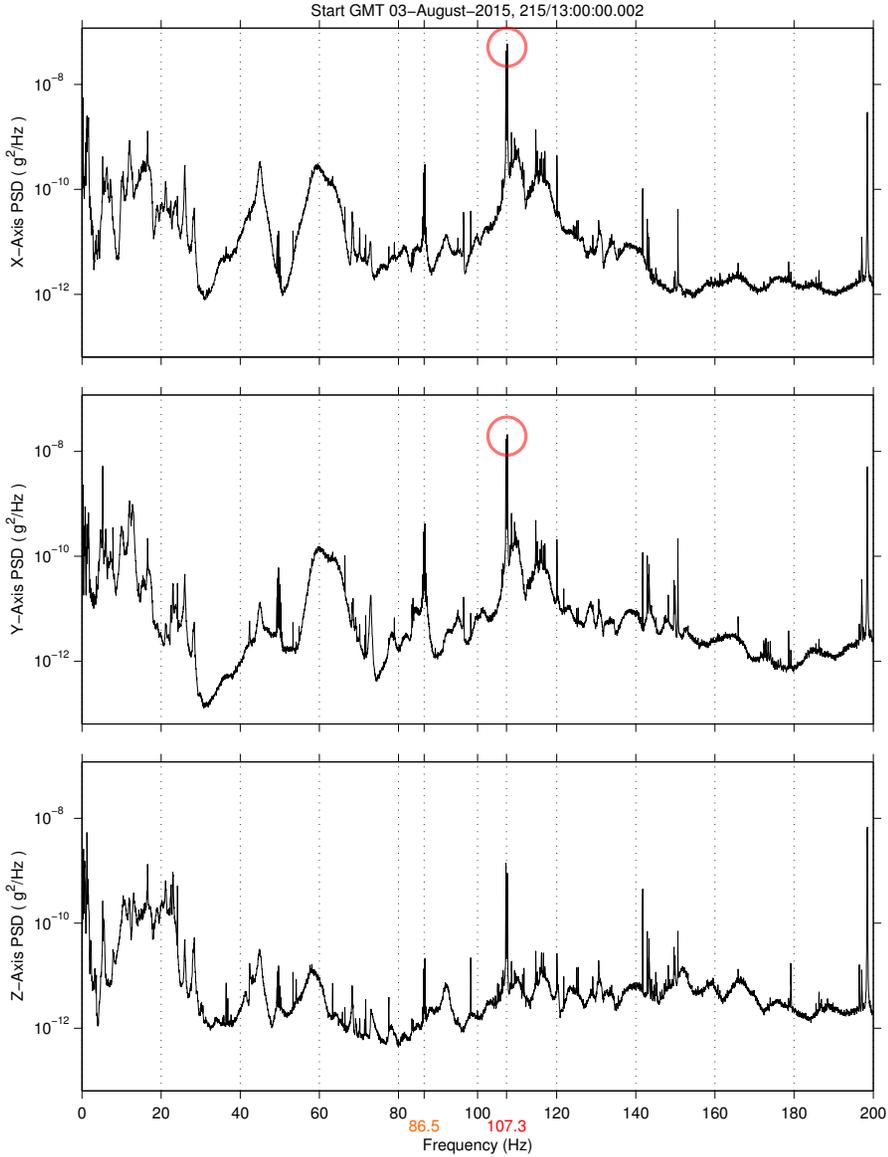


# BioLab Centrifuge Rotor Test

sams2, 121f08 at COL1A3, EPM, near PK-4 [371.17 287.43 165.75]  
 500.0000 sa/sec (200.00 Hz)  
 Δf = 0.031 Hz, Nfft = 16384  
 P = 14.9%, No = 2439

SAMS2, 121f08, COL1A3, EPM, near PK-4, 200.0 Hz (500.0 s/sec)

SSAnalysis[ 0.0 0.0 0.0]  
 Hanning, k = 246  
 Span = 7200.00 sec.



Description	
Sensor	SAMS 121f08 500.0 sa/sec, 200 Hz
Location	COL1A3, EPM, near PK-4
Plot Type	Power Spectral Density

- Notes:**
- These power spectral density plots show the averaged spectra used in the previous color spectrogram, this time on a per-axis basis for the 3 orthogonal measurement axes.
  - Note that the vertical axis on these plots is logarithmic and that the spectral peak near 107.3 Hz was aligned primarily with the XY-plane.

Regime:	Vibratory
Category:	Equipment
Source:	BioLab Centrifuge Rotor



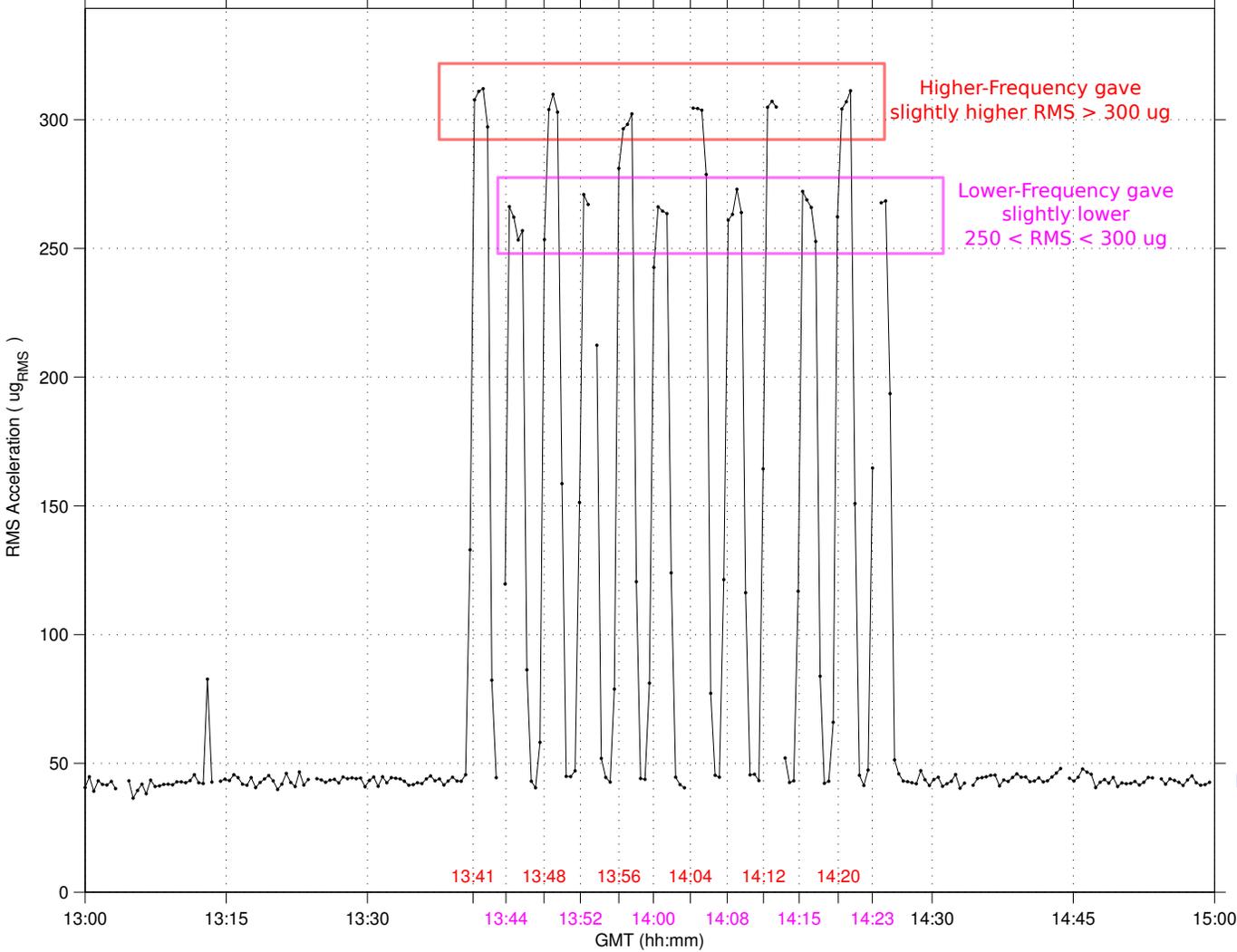
# BioLab Centrifuge Rotor Test

sams2, 121f08 at COL1A3, EPM, near PK-4[371.17 287.43 165.75]  
 500.0000 sa/sec (200.00 Hz)  
 Δf: 0.031 Hz, Range: 105 - 119 Hz  
 Temp. Resolution: 27.890 sec

SAMS2, 121f08, COL1A3, EPM, near PK-4, 200.0 Hz (500.0 s/sec)

SSAnalysis[ 0.0 0.0 0.0]  
 Hanning, k = 1

Start GMT 03-August-2015, 215/13:00:00.002



Description	
Sensor	SAMS 121f08 500.0 sa/sec, 200 Hz
Location	COL1A3, EPM, near PK-4
Plot Type	RMS Accel. vs. Time

- Notes:**
- This plot shows the RMS acceleration value versus time over the same 2-hour span as the previous color spectrogram.
  - We again see clear indication of the 12 two-minute rotor-spinning periods.
  - Note that the RMS acceleration was slightly higher during the intervals when the rotor was spinning at the slightly higher-frequency, and these intervals were alternating.

Regime:	Vibratory
Category:	Equipment
Source:	BioLab Centrifuge Rotor



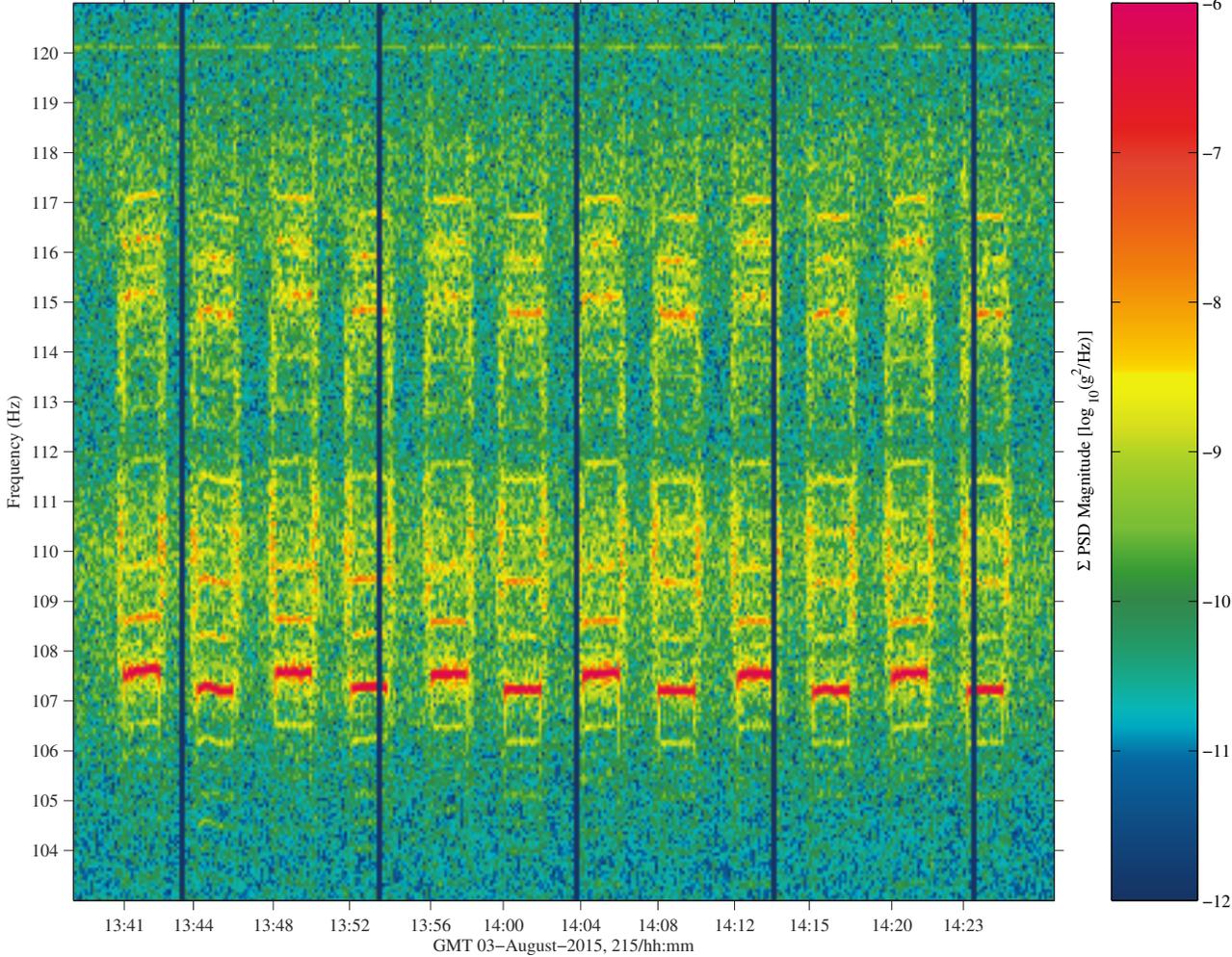
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 Δf = 0.061 Hz, Nfft = 8192  
 Temp. Res. = 8.192 sec, No = 4096

SAMS2, 121f08, COL1A3, EPM, near PK-4, 200.0 Hz (500.0 s/sec)

Start GMT 03-August-2015, 215/13:00:00.002

Sum  
 Hanning, k = 877  
 Span = 119.60 minutes



Description	
Sensor	SAMS 121f08 500.0 sa/sec, 200 Hz
Location	COL1A3, EPM, near PK-4
Plot Type	Spectrogram (zoom-in)

- Notes:**
- This spectrogram zooms in on the frequency range between 104 and 120 Hz to show the frequency variations for this centrifuge.
  - We again see clear indication of the 12 two-minute rotor-spinning periods.
  - Note that the alternating high/low frequency values for every other period when the the rotor was spinning are evident here.

Regime:	Vibratory
Category:	Equipment
Source:	BioLab Centrifuge Rotor

